UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,579	08/17/2001	Raymond C. Chen	103.1073.01	5199

22883	7590	02/26/2004	EXAMINER	
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ART UNIT	PAPER NUMBER
2177	8

DATE MAILED: 02/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 August 2001*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/19Sept2001*. ✓

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Priority

1.   The Applicants' claim to domestic priority under 35 U.S.C § 120, as a

Continuation-in-Part (CIP) of application 09/642,066, filed 18 August 2000, is

acknowledged.

As a result, a priority date of no later than 17 August 2001 (the filing date of the

CIP application) is established, and depending upon the specific subject matter claimed,

the priority date could be as early as 18 August 2000.

Specification

2.   Applicant is reminded of the proper language and format for an abstract of the
disclosure.

The abstract should be in narrative form and generally limited to a single
paragraph on a separate sheet within the range of 50 to 150 words. It is important that
the abstract not exceed 150 words in length since the space provided for the abstract
on the computer tape used by the printer is limited. The form and legal phraseology
often used in patent claims, such as "means" and "said," should be avoided. The
abstract should describe the disclosure sufficiently to assist readers in deciding whether
there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information
given in the title. It should avoid using phrases which can be implied, such as, "The
disclosure concerns," "The disclosure defined by this invention," "The disclosure
describes," etc.

3.   The abstract of the disclosure is objected to because it **exceeds 150 words** limit.

Correction is required. See MPEP § 608.01(b).

4.   The title of the invention is not descriptive. A new title is required that is clearly

indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

5.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6.   Claims 15-19, 21, and 22 are rejected under 35 U.S.C. 102(e) as being

anticipated by **Dunham** (U.S. Patent 6,269,431).

        Regarding claim 15, **Dunham** teaches a method of operating a filesystem, said

filesystem including a live filespace accessible to users and a zombie filespace not

accessible to users, said method including dynamically growing said zombie filespace

(col. 13, lines 1-11).

        Regarding claims 16, 17, 19, and 22, **Dunham** further teaches the steps of:

        a).   a deletion operation on a file in said live filespace, allocating storage within

said zombie filespace for metadata associated with said file (col. 14, lines 43-49);

        b).   performing said dynamic growth in response to failure of said allocation

of storage (col.13, lines 1-11);

c).   re-performing said allocation of storage after said dynamic growth (col. 13,

lines 1-11); and

d).   transferring said file from said live filespace to said zombie filespace (col.

14, lines 43-49).

Regarding claims 18 and 21, **Dunham** further teaches a method of operating a

filesystem, said filesystem including a live filespace accessible to users and a zombie

filespace not accessible to users, said method including transfer of a file to said zombie

filespace before breakage of links to blocks in said file, in response to an operation on

said file, said operation using said zombie filespace (col. 14, lines 43-49).

7.   Claims 24 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by

Kleiman (U.S. Patent 6,317,844 B1).

Regarding claims 24 and 27, **Kleiman** teaches a method of operating a

filesystem, said filesystem including a live filespace accessible to users and a zombie

filespace not accessible to users, said method including replay of an operation on a file,

said operation using said zombie filespace (col. 3, lines 34-51).

Claim Rejections - 35 USC § 103

8.   ' Claims 1, 3, 7-14 are rejected under 35 U.S.C. 103(a) as being unpatentable

over **Lam** (U.S. Patent 5,564,037A) in view of **Kleiman** (U.S. Patent 6,317,844B1).

Regarding claim 1, **Lam** teaches a method of operating a filesystem, said

filesystem including a live filespace (i.e., file server 10 in Fig. 1) accessible to users and

a zombie filespace (i.e., secondary storage) not accessible to users (Fig. 1, element

20).

Although the prior art does not explicitly indicate that the secondary storage is

not accessible to users, but it should be understood that Lam's system utilizes the

secondary storage for internal file manipulations and therefore, it is apparent that the

users are not allow to access this storage element.

Lam does not explicitly teach the method including recording changes to said

zombie filespace in a persistent memory.

Kleiman, however, teaches recording changes to said filespace in a persistent

memory (col. 3, lines 34-42).

It would have been obvious to one of ordinary skill in the art at the time of the

invention was made to combine the teachings of the cited references because

Kleiman's teaching would have allowed **Lam's** to quickly recover from failure of any

storage element and keep the system continued available as it implements frequent and

rapid checkpoints among its storage element and rapidly distributes duplicate

commands for those operations between checkpoints among its storage elements (col.

1, lines 54-63).

Regarding claim 3, **Lam** further teaches a truncation operation on a file in live

filespace comprising the steps of:

a).   a truncation operation on a file in said live filespace, transferring at least a

portion of said file from said live filespace to said zombie filespace (col. 6, lines 16-25);

b).   breaking links associating disk blocks with said file in a plurality of

steps while a portion of said file is associated with said zombie filespace (col.

lines 28-31),

c).   altering said live filespace to reflect changes associated with said

breaking of links (col. 6, lines 31-45).

Lam does not explicitly teach wherein said recording of changes includes

recording said breaking of links in a plurality of steps.

Kleiman, however, teaches wherein said recording of changes includes

recording said breaking of links in a plurality of steps (col. 3, lines 34-42).

Regarding claims 7 and 8, **Kleiman** further teaches an operation performed

using said zombie filespace, checkpointing said filesystem during performance of said

operation (astract).

Regarding claims 9-11, **Kleiman** further teaches replaying a set of said changes

in response to said record (col. 3, lines 34-51).

Regarding claims 12-14, **Kleiman** further teaches wherein said persistent

memory includes a log of substantially all changes, within a selected time duration, to

either said live filespace or said zombie filespace (col. 2, lines 2-13 and abstract).

9.   Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Lam (U.S. Patent 5,564,037) and **Kleiman** (U.S. Patent 6,317,844 B1) as applied to

claims 1, 3, 7-14 above and further in view of **Dunham** (U.S. Patent 6,269,431).

Regarding claim 2, **Lam** teaches a deletion operation on a file in livespace

comprising the steps of:

b).   breaking links associating disk blocks with said file in a plurality of

steps while said file is associated with said zombie filespace (col. lines 28-31).

c).   altering said live filespace to reflect said operation (col. 6, lines 31-45).

Kleiman teaches recording of changes includes recording said breaking of links

in a plurality of steps (col. 3, lines 34-42).

Lam and **Kleiman** does not explicitly teach the steps of:

a).   deletion operation on a file in said live filespace, transferring said file from

said live filespace to said zombie filespace ;

Dunham, however, teaches the deletion operation on a file in said live filespace,

transferring said file from said live filespace to said zombie filespace (col. 14, lines 43-

50).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of the cited references because **Dunham's** teaching would have allowed **Lam** and **Kleiman's** to enhance the system performance of the primary filespace by carrying out a delete file operation command in another filespace.

Regarding claim 6, **Lam** further teaches an operation performed using said zombie filespace as discussed in claim 1.

Lam and **Kleiman** does not explicitly teach altering a size of said zombie filespace during performance of said operation.

Dunham, however, teaches altering a size of said filespace during performance of said operation (col. 13, lines 1-11).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of the cited references because **Dunham's** teaching would have allowed **Lam** and **Kleiman's** to adjust the filespace in accordance with the need of the system in order to accommodate the requests.

10.   Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Lam** (U.S. Patent 5,564,037) and **Kleiman** (U.S. Patent 6,317,844 B1) as applied to claims 1, 3, 7-14 above and further in view of **Jacobs et al.** (U.S. Patent 6,334,114 B1).

Regarding claim 4, **Lam** and **Kleiman** teach for an operation apparent to users as substantially atomic, performing said operation in a plurality of steps using said zombie filespace, wherein said recording changes is performed in said persistent memory for each of said plurality of steps as discuss above in claims 1-3.

Lam and **Kleiman** does not explicitly teach performing file operations and recording changes apparent to users are substantially atomic.

Jacobs et al., however, teaches performing file operations and recording changes apparent to users are substantially atomic (col. 20, lines 16-21 and col. 27, lines 42-47).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of the cited references because **Jacobs's** teaching would have allowed **Lam** and **Kleiman's** to protect the integrity of data and also satisfy the fundamental requirement for data security.

11.   Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Lam** (U.S. Patent 5,564,037) and **Kleiman** (U.S. Patent 6,317,844 B1) as applied to claims 1, 3, 7-14 above and further in view of **Dunham** (U.S. Patent 6,269,431) and **Cannon** (U.S. Patent 6,041,334).

Regarding claim 5, **Lam** and **Kleiman** do not explicitly teach an operation performed on a to file having attached data elements, performing said operation using said zombie filespace.

Dunham, however, teaches performing the deletion operation on a file in the zombie filespace (col. 14, lines 43-50).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of the cited references because **Dunham's** teaching would have allowed **Lam** and **Kleiman's** to enhance the system performance of the primary filespace by carrying out a delete file operation command in another filespace.

Lam, Kleiman, and **Dunham** do not teach wherein an operation performed on a to file having attached data elements.

Cannon, however, teaches a step wherein an operation performed on a to file having attached data elements (col. 2, lines 34-37).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of the cited references because **Cannon's** teaching would have allowed **Lam, Kleiman,** and **Dunham's** to facilitate file management with reduced overhead by grouping smaller files into larger aggregate files.

12.   Claims 20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Dunham** (U.S. Patent 6,269,431) as applied to claims 15-19, 21, and 22 above and further in view of **Lam** (U.S. Patent 5,564,037) and **Kleiman** (U.S. Patent 6,317,844 B1).

Regarding claims 20 and 23, **Dunham** does not explicitly teach a **truncation** operation on a file in said live filespace, said transfer includes

a).   creating a link associating at least a portion of said file with said

zombie filespace; and

b).   breaking a link associating said portion with said file in said live

filespace; and said truncation operation includes breaking links associating disk

blocks with said file in a plurality of steps while a portion of said file is associated with

said zombie filespace, wherein said recording of changes includes recording said

breaking of links in a plurality of steps; and

c).   altering said live filespace to reflect changes associated with said

breaking of links.

Lam further teaches the steps of:

a).   a truncation operation on a file in said live filespace, transferring at least a

portion of said file from said live filespace to said zombie filespace (col. 6, lines 16-25);

b).   breaking links associating disk blocks with said file in a plurality of

steps while a portion of said file is associated with said zombie filespace (col.

lines 28-31),

c).   altering said live filespace to reflect changes associated with said

breaking of links (col. 6, lines 31-45).

Lam does not explicitly teach wherein said recording of changes includes

recording said breaking of links in a plurality of steps.

Kleiman, however, teaches wherein said recording of changes includes

recording said breaking of links in a plurality of steps (col. 3, lines 34-42).

It would have been obvious to one of ordinary skill in the art at the time of the

invention was made to combine the teachings of the cited references because

Kleiman's teaching would have allowed Lam and Dunham's to quickly recover from

failure of any storage element and keep the system continued available as it

implements frequent and rapid checkpoints among its storage element and rapidly

distributes duplicate commands for those operations between checkpoints among its

storage elements (col. 1, lines 54-63).

13.   Claims 25 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Kleiman (U.S. Patent 6,317,844 B1) as applied to claims 24 and 27 above and

further in view of Dunham (U.S. Patent 6,269,431) and Lam (U.S. Patent 5,564,037).

Regarding claims 25 and 28, Kleiman teaches wherein replay is responsive to a

set of recorded changes in persistent memory (col. 3, lines 34-42).

Kleiman does not explicitly teach the steps of:

a).   deletion operation on a file in said live filespace, transferring said file from

said live filespace to said zombie filespace.

b).   breaking links associating disk blocks with said file in a plurality of

steps while said file is associated with said zombie filespace, and recording

said breaking of links in said persistent memory in a plurality of steps; and

c).   altering said live filespace to reflect said deletion operation, and

recording said alteration in said persistent memory.

Dunham, however, teaches the steps of:

a).   deletion operation on a file in said live filespace, transferring said file from

said live filespace to said zombie filespace (col. 14, lines 43-49).

It would have been obvious to one of ordinary skill in the art at the time of the

invention was made to combine the teachings of the cited references because

Dunham's teaching would have allowed **Kleiman's** to enhance the system

performance of the primary filespace by carrying out a delete file operation command in

another filespace.

Kleiman and **Dunham** do not explicitly teach the steps of:

b).   breaking links associating disk blocks with said file in a plurality of

steps while a portion of said file is associated with said zombie filespace.

c).   altering said live filespace to reflect changes associated with said

breaking of links.

Lam, however, teaches the steps of:

b).   breaking links associating disk blocks with said file in a plurality of

steps while a portion of said file is associated with said zombie filespace (col.

lines 28-31).

c).   altering said live filespace to reflect changes associated with said

breaking of links (col. 6, lines 31-45).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of the cited references because **Lam's** teaching would have allowed **Kleiman** and **Dunham's** to unable users to access to deleted files.

13.   Claims 26 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kleiman** (U.S. Patent 6,317,844 B1) as applied to claims 24 and 27 above and further in view of **Lam** (U.S. Patent 5,564,037).

Regarding claims 26 and 29, **Kleiman**, teaches wherein said recording of changes includes recording said breaking of links in a plurality of steps (col. 3, lines 34-42).

Kleiman does not explicitly teach the steps of:

a).   a truncation operation on a file in said live filespace, transferring at least a portion of said file from said live filespace to said zombie filespace.

b).   breaking links associating disk blocks with said file in a plurality of steps while a portion of said file is associated with said zombie filespace.

c).   altering said live filespace to reflect changes associated with said breaking of links.

Lam, however, teaches a truncation operation on a file in live filespace comprising the steps of:

a).   a truncation operation on a file in said live filespace, transferring at least a

portion of said file from said live filespace to said zombie filespace (col. 6, lines 16-25);

b).   breaking links associating disk blocks with said file in a plurality of

steps while a portion of said file is associated with said zombie filespace (col.

lines 28-31),

c).   altering said live filespace to reflect changes associated with said

breaking of links (col. 6, lines 31-45).

It would have been obvious to one of ordinary skill in the art at the time of the

invention was made to combine the teachings of the cited references because **Lam's**

teaching would have allowed **Kleiman's** to enhance the system performance by

reducing the processing load on the primary storage (col. 5, lines 20-26).

Conclusion

14.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

Gainer et al. (US006321219B1)

Humlicek et al. (US006594744B1)

Zayas et al. (US006560615B1)

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Leslie Wong whose telephone number is (703) 305-

3018. The examiner can normally be reached on Monday to Friday 9:30am - 6:30 pm.
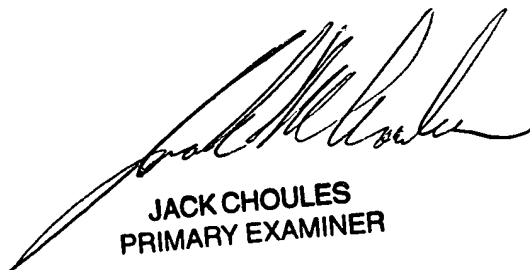
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Breene can be reached on (703) 305-9790. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic. Business Center (EBC) at 866-217-9197 (toll-free).

Leslie Wong
Patent Examiner
Art Unit 2177

Lw
21 February 2004

JACK CHOULES
PRIMARY EXAMINER